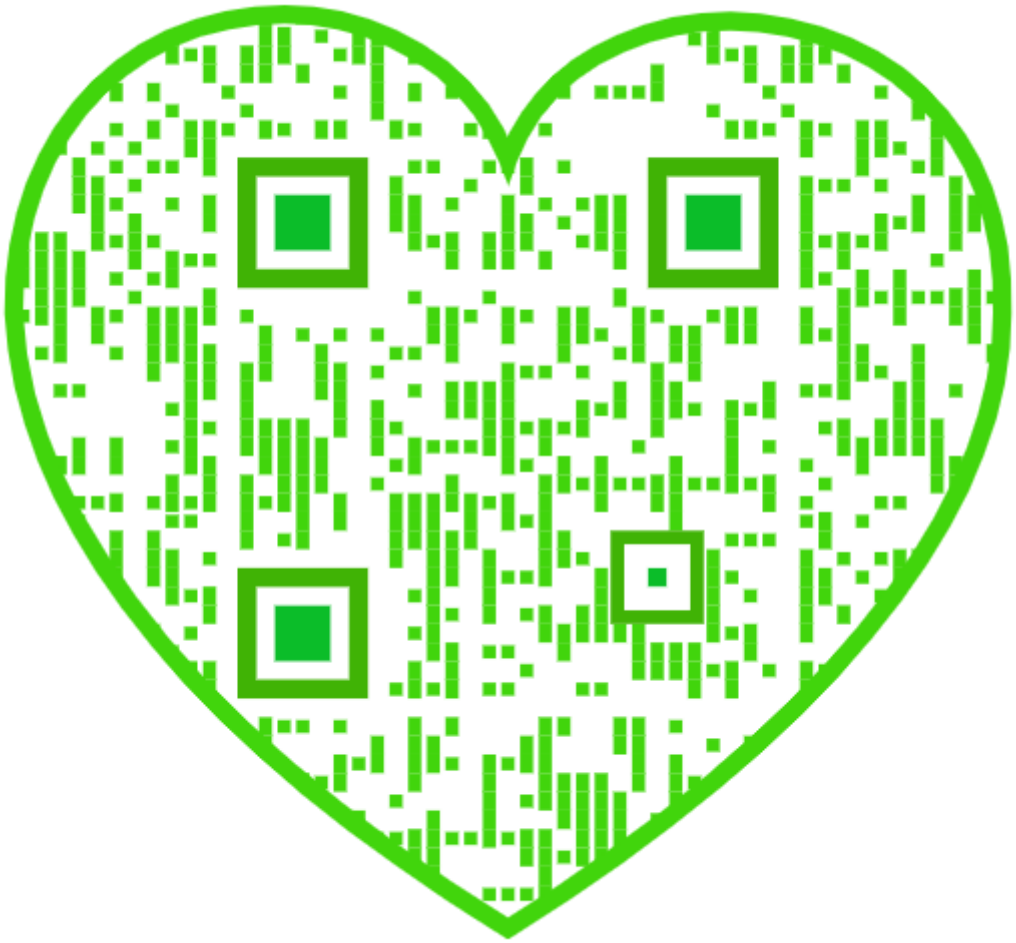

Dr. Farlow
With the Compliments of
W. L. Jepson

ERYTHEA

A JOURNAL OF BOTANY, WEST AMERICAN AND GENERAL

EDITED BY

WILLIS LINN JEPSON

INSTRUCTOR IN BOTANY, UNIVERSITY OF CALIFORNIA

VOLUME V.

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While the articles on the general and special morphology and classification of Pacific Coast plants impart to the journal a West-American character, papers on physiological botany, geographical distribution and general topics will constantly be given place. Not the least interesting feature of the issues are the short articles, news notes, open letters and comments on current literature.

It is proposed in the early ensuing numbers to publish engravings of a considerable number of Californian plants which have, heretofore, been inadequately studied, imperfectly described and poorly or not at all illustrated. Another feature of interest will be historical papers on Californian Botany and Botanists.

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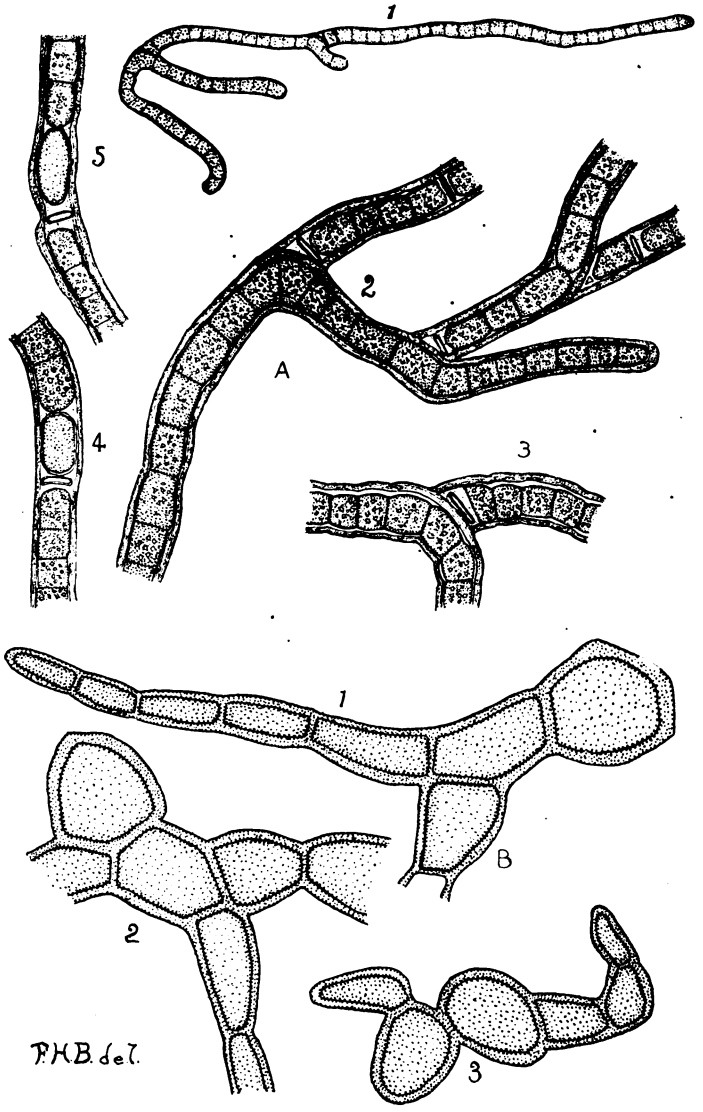
THE CONIFERÆ OF THE SANTA LUCIA MOUNTAINS.

By ALICE EASTWOOD.

THE Santa Lucia Mountains take their name from their highest peak, which rises near the middle of the chain in Monterey County to an elevation of 6,100 feet. These mountains extend along the coast of Monterey and San Luis Obispo Counties from Monterey Bay southward, parallel with the coast. South of San Simeon Bay they trend towards the southeast, losing their identity in the low hills of the Carisa Plain. From Pt. Sur to beyond Pt. Gorda they present a precipitous front to the ocean, rising abruptly from 3,000 to 4,000 feet from the very edge of the ocean. Numerous mountain streams come tumbling down through quickly descending cañons and widen them, delta-like, forming small tracts of comparatively level land. These little benches are very fertile and well supplied with the purest water; so that, in spite of their isolation and limited area, they have been taken up by settlers, who are known throughout the county as "The Coasters."

These mountains are especially interesting to the botanist, since they are the southern limit of the flora that follows *Sequoia sempervirens* and is so characteristic of the northern coast forests. They also contain species most abundantly represented in the Sierras, as well as many peculiar to themselves. These different floras have their representatives among the Coniferæ, so that the distribution of the Coniferæ will indicate, somewhat, the distribution of the different floras.

Sequoia sempervirens and *Pseudotsuga taxifolia* are associated together, as in the forests further north; but the latter is not confined to the coast cañons, being found also within sight of the ocean on the ridge above, near the Los Burros mine, and in other places not visited by the writer. The redwoods scarcely venture above the fog line, which, in these steep mountains along the coast, is distinctly visible to the eye, as well as instantly perceptible to the sense of feeling. They are rarely found outside of the cañons, since the steep slopes of the hills offer an environment that is too dry. The soil is dry and the air also. It must not be thought that



TOLYPOTHRIX SETCHELLII AND GOMONTIA HOLDENII.

SOME PERFORATING AND OTHER ALGÆ ON FRESH-WATER SHELLS.

By F. S. Collins.

On August 24, 1895, Dr. W. A. Setchell and Mr. Isaac Holden found, at Twin Lakes, Salisbury, Litchfield County, Conn., some Unio shells, on which appeared to be quite a growth of algæ. Mr. Holden sent me some of the material, and after examining it, and submitting some to Dr. E. Bornet, of Paris, I find the following species represented, part of them perforating the substance of the shells, part attached to the outside.

Plectonema terebrans Born. & Flah. This was very abundant all through the shells, and when the latter were decalcified, formed a dense mat, which made it rather difficult to distinguish the other algæ that grew in company with it. I do not find that it has been hitherto mentioned as occurring in this country, but Mr. Holden reports that it is common in marine shells on the shores of Long Island Sound, in company with *Gomontia polyrhiza* and the other species usually found in marine shells. It is figured and described in the Bulletin de la Soc. Bot. de France, xxvi, 158, Pl. 10, figs. 5 and 6. The filaments are 1 to 1.5μ diam., flexuous, and generally rather freely branched.

Hyella fontana Huber & Jadin. This species also is new to this country; it is scattered through the shells, sometimes in rather dense, chroococcoidal masses, sometimes in loosely branching filaments. It is described and figured in the *Journal de Botanique*, vi, 285. Like the Plectonema, it penetrates the interior of the shells, but in the Twin Lakes specimens it is much less abundant than the latter.

Gomontia Holdenii. Irregularly branched; cells with thick walls, varying in shape, oval, cylindrical or polygonal; the terminal cell cylindrical or tapering, not clavate; diameter of cells varying from 12 to 50μ; sporangia (only once observed) ovate with elongate base, about 100μ long, 30μ wide. In old shells of Unio.

The large, mostly oval cells are quite distinct in appearance from

the cells of *G. polyrhiza*, which is common in marine shells along the coast. At the time the figures were drawn I had not succeeded in finding any sporangia; since then I have found two; they were of oval shape, narrowing at the base so as to seem somewhat stipitate, about 100μ in length and 30μ in diameter at the broadest part. The sporangia of *G. polyrhiza* are variable in form, and later observations may show that the sporangia are equally variable in this case. In the absence of information as to their formation and development the description is necessarily incomplete, but there is no doubt of the distinctness of this species from *G. polyrhiza*. The plant occurs only in small quantity, and is almost always covered with a dense mass of Plectonema, so that it is very difficult to examine.

In addition to the species of perforating algæ mentioned, the shells contain also a very fine filamentous plant, which agrees well with the description and figure of the fungus *Ostracoblabe implexa* in the paper by Bornet and Flahault previously mentioned, p. 171, pl. 12, figs. 1–4.

The Plectonema is the only species occurring in sufficient quantity to be noticeable to the naked eye; it gives a pale bluish green stain to the shell; under the microscope it is of the same color, but brighter. The tubes containing the Ostracoblabe look pinkish under the microscope, but the plant itself was found by Bornet and Flahault to be quite colorless; Gomontia is grass-green and Hyella pale brown; but neither is abundant enough to show externally.

Besides the species in the substance of the shells, several algæ were growing on the outside; among them were *Scytonema Myochrous* Ag., *Dichothrix Hosfordii* (Wolle) Bornet, *Microcoleus lacustris* (Rab.) Farlow, a sterile Bulbochæte and a young Nostoc; the two latter not specifically determinable. Also on all the shells was a Tolypothrix, fairly abundant, and apparently not hitherto described.

Tolypothrix Setchellii. Filaments scattered or arranged in parallel series and forming a layer, flexuous, 7 dm. long, 5–6μ diam., occasionally thickened and subtorulose, repeatedly pseudobranched; branches patent; sheaths thick, gelatinous, refractive, colorless or yellowish; trichomes pale ærugineous, 4μ thick, torulose,

articulations equal to the diameter or longer; heterocysts discoid. On shells in fresh water.

In this plant one or more cells adjoining a heterocyst often take on the appearance of an ordinary heterocyst, separating from the other cells, forming a thicker membrane, especially at the end opposite the heterocyst; these cells also take a slightly different color from the ordinary vegetative cells under the action of chlor-iodide of zinc.

Hyella fontana, *Plectonema terebrans*, and *Gomontia Holdenii* are distributed in Collins, Holden, and Setchell, Phycotheca Boreali-Americana, under Nos. 303, 306, and 316, respectively.

I am much indebted to Dr. Bornet for his kindness in identifying the already known species, and pointing out the distinctive points of the new species.

EXPLANATION OF PLATE IV.

A, *Tolypothrix Setchellii;* fig. 1, general habit of filament; fig. 2, portion of a branching filament; fig. 3, branch with discoid heterocyst; fig. 4, heterocyst with changed adjacent cell; fig. 5, heterocyst with several such cells.

B, *Gomontia Holdenii;* figs. 1, 2, and 3, portions of fronds, showing various shapes of cells.

Figures A 1, and B 1, 2, and 3, are magnified 325 diameters; A 2, 3, 4, and 5, are magnified 860 diameters. The figures were drawn with camera by Mr. F. H. Billings.

CALIFORNIAN HERB LORE.

THE Mexicans call Yucca "Keote" and use the root for soap. Some of our own people who use it claim that it is very nice for washing flannels.

The "Yerba de la Pasmo," *Gutierrezia Californica*, is made into a decoction and the Mexicans bathe in it for whatever ails them.

"Yerba mansa" is from *manso*, gentle, and is used for mild poultices, especially applied to the eyes. This plant is the *Anemopsis Californica* of botanists.—MRS. I. HAGENBUCK, Dulzura, San Diego County, Cal.

DR. BEHR reports that the Spaniards, in early days, used a decoction of the leaves of *Rhamnus Californicus* as a preventive against the poisoning from poison oak. Mr. Castro, who owned San Lorenzo in the year 1851, told him about it. Those who are susceptible should bathe the face and hands in the decoction, allowing it to dry. If, on the return home, a bath be taken in water containing soda and the body be afterwards dusted with rice powder, immunity from the poisoning is guaranteed. Most people will find that the use of the decoction alone is sufficient.—A. E.

THE Spanish people in the vicinity of San Gregorio in San Mateo County call the Rhamnus "Tunitas." There is a creek near by so named, undoubtedly from this common shrub.—GEORGE T. RUDDOCK.

REVIEWS AND CRITICISMS.

On some Lithothamnia. By M. FOSLIE. Det. kgl. Norske Videnskabers Selskabs Skrifter, No. 1, 1897.

On page 39 of the last volume of this journal, attention was called to the fact that the Californian coast had been credited with five species of this genus of Corallines, two of which were new to science. In the present paper, M. Foslie describes four more from our coast, thus increasing the number to nine.

The four new species are *L. proboscideum*, Monterey; *L. grumosum*, Carmel Bay and San Pedro; *L. Setchellii*, San Pedro; and *L. decipiens*, San Pedro. The last three were collected by the writer of this note, but the collector, date of collection, and other exact data are wanting in the case of the first species. Mr. Foslie has still other material from California and his final monograph on the genus will be awaited with interest.—W. A. SETCHELL.

SHORT ARTICLES.

LAMINARIA SESSILIS AG. IN CALIFORNIA.—In 1862, Harvey described among other new things collected by Lyall at Vancouver Island, a singular kelp to which he gave the name of *Laminaria*

apoda. In 1867, J. G. Agardh referred this species to the *Laminaria sessilis* of his father, C. Agardh. The locality whence came the type specimens of *L. sessilis* seems to be in great doubt, there being no greater certainty than that they came from some portion of the Pacific Ocean. Lyall's specimens came from the Straits of Fuca. While collecting at Fort Ross, in Sonoma County, the type locality for several of the kelps of our western coast, it was the writer's good fortune to find an abundance of this species growing upon the rocks between tides. This seems to be the southernmost locality for this species unless it may perhaps extend a few miles farther south to Point Reyes. It seems quite certain that it does not extend south of Point Reyes to any extent, since careful search at Duxbury Reef, San Francisco, Santa Cruz, and Monterey have failed to reveal it. Its southward extension indicates that more Vancouver forms may ultimately be found upon the Californian coast and that Point Reyes probably marks the boundary of a southern extension of the Vancouver algal flora.—W. A. SETCHELL.

THE NORTH AMERICAN SPECIES OF CHRYSOSPLENIUM.—A preliminary revision of the North American species of this genus by Mr. J. N. Rose appeared in the April *Gazette* (xxiii, 274). *Chrysosplenium glechomæfolium* as a name is replaced by *C. Scouleri*, which as a varietal name antedates the name currently employed. Mr. Rose gives the range of the species as "Oregon and Washington." It is credited in the Flora Franciscana to Humboldt County, Calif., and at a later date (May, 1895) specimens were brought to us from Navarro, Mendocino Co., by Miss Edith Byxbee, a student of the University of California. This is the most southerly known station. *C. Beringianum* from St. Paul Island is described as new. The other two species are *C. alternifolium* and its variety raised to specific rank as *C. tetrandrum*.—W. L. J.

THE SOUTHERN RANGE OF LAWSON'S CYPRESS.—The occurrence of *Cupressus* (*Chamæcyparis*) *Lawsoniana* as far south as Humboldt Bay, Cal., has been recently questioned. Mr. Henry Melde, of Eureka, informs me that it is still to be seen along the gulches of the Mad River, attaining between seventy-five and one hundred feet in height.—J. B. D.

CORRECTION.—Since the printing of my notes on page 79 preceding, my attention has been called to the fact that the akenes of *Eriogonum pusillum* and its allies are truly lenticular.—K. B.

MISCELLANEOUS NOTES AND NEWS.

MR. and MRS. J. G. LEMMON are collecting this season in the Yosemite region of the High Sierras.

THE late Dr. Bastin's chair in the College of Pharmacy of Philadelphia has been divided between Dr. Low and Prof. Henry Kræmer.

DR. FISCHER VON WALDHEIM succeeds the late Dr. Th. Batalin as Director of the Imperial Botanical Garden at St. Petersburg, Russia.

PROF. W. A. SETCHELL examined during June the algal flora of the coast near the mouth of the Russian River, California, with very interesting results.

ISSUES No. 17 and No. 18 of C. G. Lloyd's "Photogravures of American Fungi," just received, are most excellent representations of the open and closed forms of *Scleroderma Corium* (Guers.) Grav.

THE post of Director of the Royal Botanical Gardens, Ceylon, formerly filled by the late Dr. Trimen, has been placed in the charge of Mr. J. C. Willis, M. A., Senior Assistant and Lecturer in Botany in the University of Glasgow.

P. A. RYDBERG, of Columbia University, expects to spend a part of the summer collecting in Montana. E. O. Wooton, a graduate student of the same institution, goes to New Mexico to make collections which he will offer for sale.

MR. S. B. PARISH returned to San Bernardino, California, in the latter part of June, from an extended trip through a large part of San Diego County, including the mountains and seacoast. Many valuable data were gathered concerning the distribution of the plants of the region.

DR. LUCIEN M. UNDERWOOD, Professor of Botany in Columbia University, New York City, and Dr. H. H. Rusby, of the New York College of Pharmacy, have been spending the summer at the Kew Herbarium. Dr. Rusby has been working up his South American collections.

A PRIZE of one thousand marks is offered by the Prince Joblonowski Society at Leipzig, Germany, for the best study of the causes which produce and control the direction of the lateral axes of shoot and root system. The memoir must be submitted to the secretary of the Society by November 30, 1900.

DR. EZRA BRAINERD, of Middlebury, Vt., Mr. Marcus E. Jones, of Salt Lake City, Utah, Dr. Harshberger, of the University of Pennsylvania, have been botanizing in California this summer. Dr. Brainerd has been especially devoting himself to field studies of the Carices in the Sierra Nevada, and Mr. Jones to the Astragali.

THE BERLIN ACADEMY OF SCIENCES offers a prize of two thousand marks for a memoir based upon researches and observations on the origin and behavior of varieties of cereals during the past twenty years. The memoir may be written in German, Latin, French, English, or Italian, and must be presented by December 31, 1898.

MR. T. S. BRANDEGEE, of San Diego, has been botanizing—the season being a favorable one—on all the islands off the western coast of Lower California, including several small ones never before visited by a botanist. He went with the schooner Wahlberg—A. W. Anthony's vessel—as far down as San José del Cabo, where he left the schooner, which continued to Socorro and Clarion Islands, with a botanical collector aboard.

DR. JULIUS VON SACHS died at Würzburg, on the 29th of last May. He was born in Breslau in 1832, and for many years prior to his death was Professor of Botany in the University of Würzburg. Sachs was the author of the celebrated *Vorlesungen über Pflanzenphysiologie*, better known to readers of English as Sachs' Physiology of Plants. A sketch of his life, by Prof. Francis Darwin, appeared in *Nature*, lvi, 201, July 1, 1897.

THE ALABAMA EXPERIMENT STATION has published a list of the Fungi of Alabama, as its Bulletin No. 80, compiled by Professor Underwood and Mr. F. S. Earle. Eleven hundred species are enumerated. But little has hitherto been known of the fungous flora of that region, and the list will be welcomed by mycologists, especially as it appears to be decidedly up to date, and contains much bibliographical and analytical matter.

MR. F. V. COVILLE has been investigating the wanderings of John Jeffrey, explorer of the Oregon Botanical Association of Edinburgh. The results of his researches among various rare papers and files of private letters are published in the Proceedings of the Biological Society of Washington (xi, 57–60) under the title "The Itinerary of John Jeffrey, an early botanical explorer of western North America." Jeffrey sailed from London in 1850 for Hudson Bay and crossed the Rocky Mountains at Athabasca Pass between Mount Brown and Mount Hooker. The winter of 1851–52 he spent on Vancouver Island. From about August 1 to November 1, 1852, he engaged in an expedition to the valleys of the Umpqua, Klamath, Trinity and Rogue Rivers, Siskiyou Mountains and Mount Shasta. In the next year (1853) he proceeded again southwards, collecting in the Umpqua Valley, Mount Shasta, Applegate River, Scott Mountains and the Coast Range, on the Sierra Nevada in latitude 38°, in the Sacramento Valley and the American fork of the Sacramento, and at San Francisco Bay. From San Francisco Jeffrey went to San Diego and thence to Yuma. It is conjectured that he was lost on the Colorado Desert, as nothing more was ever heard of him. He collected *Pinus Jeffreyi* and other rare plants.

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NOTES ON CACTEÆ.—I.

By Katharine Brandegee.

Cacteæ of Baja California.

The first collection, from this region, of any importance or extent was made by William M. Gabb, who, in the service of the "Lower California Company," which then held, a conditional grant of the greater part of the peninsula, traversed the country from Cape St. Lucas to San Diego. This was in the year 1867, and at the request of Dr. Engelmann, he made specimens of all the different kinds he was able to distinguish. They were, however, so small and fragmentary (the greater part of the collection could have been carried in his vest pocket) and the notes so vague that Dr. Engelmann, though he believed many to be new species, never ventured to publish any of them and they remained in his herbarium for nearly thirty years, under the tentative names he had given them until their publication by Prof. J. M. Coulter.*

The second collection was made by T. S. Brandegee in the years 1889, 1890, 1892, 1893. He knew nothing of the Gabb collection, and Engelmann being dead he determined and described the species to the best of his ability in various papers published in the Proceedings of the California Academy of Sciences and in *Zoe*.

The third collection was made by MM. Cumenge and Diguet in the vicinity of Santa Rosalia, and the results published by Dr. Weber, who had not learned of Mr. Brandegee's papers, in Bulletin du Mus. Hist. Naturelle, No. 8, Paris, 1895.

In the meantime Mr. Jones had published a single species, and Mr. C. R. Orcutt several, as the result of various expeditions into the northern part of the peninsula.

The work of Professor Coulter was in the nature of a revision of all the previous collections excepting those reported by Dr. Weber, of which he appears not to have known. In spite of the advantages given him he found such difficulties that, as he states, "the undertaking would have been abandoned only that it seemed but proper to contribute to the knowledge of the group such facts as has come

*Contr. Nat. Herb. iii, No. 2, 1894; and No. 7, 1896.

to light in the course of several years' study, especially as an excellent opportunity had been given to examine Dr. Engelmann's types and unpublished notes."

It may be doubted whether the benefits derivable from the bringing together of scattered descriptions is at all commensurate with the confusion caused by the publication of these notes, which every botanist knows Dr. Engelmann, would never have allowed to appear. If Engelmann had lived, they might have become intelligible to his trained mind, as he would have received unnamed all the material collected by American botanists and he would have been in correspondence with Dr. Weber. The botanical world would have been spared a good many synonyms and what is infinitely worse a lot of "new species" vaguely characterized and vaguely localized, which only an exhaustive knowledge of an extensive region can determine with certainty. It is somewhat the custom, and usually deservedly so, to discredit the species, so called, which occur in trade or agricultural journals, but no one of them could have done worse than to publish such a diagnosis as that of *Opuntia tesajo*, to which the honored name of Engelmann has been appended. The motives of the editor were no doubt kindly, but his work only emphasizes the impropriety of making a dead man responsible for names published at any considerable interval after his death, more particularly where the work of a specialist is edited by some one untrained in the specialty.

In the researches necessary to the preparation of this paper, Professor Trelease, of the Missouri Botanical Garden, has been extremely kind in affording me an opportunity to study and compare Gabb's types with living forms, nearly all of the Baja California species being now represented in our garden. Dr. Weber also responded generously to our request for portions of his types. In this way a considerable number of the species can be made out with certainty, and when they have attained some size and borne flowers and fruit, can be more satisfactorily compared with the species of Mexico proper.

MAMILLARIA.

This large genus appears to me divisible into four well-marked sub-genera or sections, better and more clearly separable from each

other than is the genus from Echinocactus, into which it grades through Coryphantha. The new sub-genus *Cochemiea** is in aspect and in its flowers the most distinct of all.

1. *Eumamillaria.*† Plants globose or elongated, with watery juice, and cylindrical or conical grooveless tubercles. Flowers borne usually in a ring near the top of the plant, cup-shaped or expanded, as broad or broader than long. Sepals oppressed. Stamens and styles shorter than the corolla.

2. *Coryphantha.* Plants globose or elongated, with watery juice, often robust. Tubercles grooved on the upper side. Flowers as in Eumamillaria but borne at the extremity of the groove in the axils of young tubercles, so usually nearer the vertex of the plant.

3. *Cochemiea* n. subgen. Plants cylindrical, usually much elongated, with watery juice and grooveless tubercles. Flowers mostly in a ring near the vertex, several times longer than broad, scarlet, tubular, slender, somewhat curved, and oblique with spreading, unequal, petaloid sepals, so making the flower apparently double as in *Cereus flagelliformis.* Stamens and style red, exserted.

4. *Lactescentes.* Plants depressed-globose, rarely a little elongated. Juice milky. Tubercles usually angular and somewhat leathery. Flowers as in Eumamillaria, but mostly small.

In the Botany of the Mexican Boundary Survey Dr. Engelmann unfortunately confounded *Mamillaria Goodrichii,* Scheer, with the species common about San Diego, and the rediscovery of the former now makes it necessary to separate them.

MAMILLARIA (EUMAMILLARIA) GOODRICHII, Scheer. "M. caule erecto cylindraceo basi ramoso axilis nudis, mamillis confertissimis parvulis viridibus, pulvillis nudis, aculeis exterioribus 12 diaphane albis rigidiusculis subbifarie patentissimis intertextis, centralibus 4 longioribus basi albidis superne brunneis, infimo validiore uncinato.

Caulis poll. 4 altus, diametro vix sesquipollicari, basi ramosus, aculeis undique supertextus; mamillæ vix conspicuæ subtetragone

* From "Cochemie," the name of one of the extinct Indian tribes of Baja California, from which the native races have entirely disappeared.

† I have not been able to determine whether the type of Mamillaria belongs to Eumamilaria or to Lactescentes.

compressæ; aculeorum exteriorum 8 laterales bifarie radiantes, et 4 inferiores paulum breviores, omnes diaphanei, subrigidi, cum vicinis intertexti; centralium 3 superiores aciculati, erecto-patuli, et infimus longior et crassior rigidissime hamatus. Flores ignoti.

Hæc planta quam Dom. Goodrich in Californiæ insula *Corros* detexit, in hortis infeliciter periit. Valde accedit ad diagnosin *M. Beneckei Ehrenb.*, sed propter patriam diversam notatu digna."*

As connected with the voyage of the *Herald*, it may be proper to add that Mr. J. Goodridge, surgeon, found a *Mamillaria* on the island of Cerros, east of California, which was by me forwarded to Prince Salm-Dyck, unfortunately in a very imperfect state. It has been placed by him under his *Mamillariæ heterochloræ*, page 10 of his enumeration, and is described by him as *Mamillaria Goodridgii* Scheer, thus: * * * "The prince seems to think that it approaches to *M. Beneckei*, Ehrenb, but that, on comparing the actual plants, does not appear to me to be the case. About Guaymas a *Mamillaria* somewhat similar to *M. Goodridgii* was found, but more like a *Mamillaria anguinea*, with a central spine strong and hooked; also a very robust species of *Mamillaria sphacelata.*"†

"The cactus family [on Cedros Island] was represented by some four or five species; among them a giant cereus and a very minute species of *Mamalaria*, with a disproportionately large flower, exceedingly fragrant." Report of Dr. John A. Veatch in Ross Browne's Sketch of Lower California, p. 152, 1869.

The foregoing was until three years ago the sum of our knowledge of *M. Goodrichii.* It will be noticed that Scheer corrects Salm-Dyck's "Corros" but himself locates the island to the "east" of California. In both cases these were probably errors of the printer. It is unfortunate that the name was originally printed *Goodrichii*, as it gives room for difference between those who rigidly adhere to a name as it first appears, and those who would correct obvious errors.

The plant of Scheer was brought from Cedros Island by Captain Porter in 1894 and the next year from La Paz; from San Martin Island by A. W. Anthony in 1896; from San José del Cabo by T. S. Brandegee in 1893 and from Natividad Island in 1897. Dr. Palmer's No. 693 from Cedros Island, not seen, may belong here.

* Cacteæ Hort. Dyck., p. 91, 1850.

† F. Scheer in Botany of the Herald, 286.

The plant is of more slender growth than the San Diego species, with naked or sparsely woolly axils, much larger, more or less rose-colored flowers, and longer slender, subulate, style-divisions. In the twoscore plants I have seen the flowers were all hermaphrodite. A stouter form with stronger spines sent recently by Captain Porter from Topolobampo, Sinaloa, appears to answer to that mentioned by Scheer as occurring at Guaymas.

The species is very near *M. Grahami*, differing chiefly in the less numerous spines, and both may belong to previously described Mexican forms.

MAMILLARIA (EUMAMILLARIA) DIOICA. *M. Goodrichii* of Engelmann, not of Scheer. Simple or cæspitose, or occasionally branching above; beginning to flower at one inch or less, but attaining a height of 6–10 inches. Tubercles green or sometimes glaucous, cylindrical, often angular; axillæ sparsely woolly in the growing part, bearing 4–15 setæ, often as long as the tubercle; outer spines usually white, radiant, 11–22, covering the whole plant, centrals 1–4, the superior turned upward among the radials, the lowest longer and stouter and porrect, 8–15 mm. long: flowers 10–22 mm. long, yellowish-white, sometimes reddish, incompletely dicœcious; petals lanceolate-acuminate, much longer and more spreading in the male flowers; fruit, like the flowers, borne in a circle near the top, clavate or oval, scarlet, 10–25 mm. long; seeds as in most of the related species black, somewhat pyriform and minutely pitted.

From San Diego a short distance north but southward to Cape St. Lucas always so far as known near the coast. Some plants brought by Mr. Anthony from San Juanico, Baja California, have the radial spines brown, and plants from San José del Cabo show colored rings of growth. It has been found as far as known on none of the islands excepting Todos Santos near Ensenada.

M. DIOICA var. INSULARIS. *Cactus Palmeri* Coult. Contr. Nat. Herb. III, 108, not *M. Palmeri* Jacobi, in Otto and Dietr. Alg. Gart. xxiv (1856) 82.

Differing from the type in its more densely cæspitose form, more woolly axils, and shorter spines, which are usually whiter, shorter, more numerous, and the centrals ordinarily straight. Flowers and fruit as in the type.

This plant was named as a species principally because of

straight central spines, but in the numerous specimens brought from San Benito Island * (it has been found nowhere else), many have the lower central hooked and darker, as in the type of *dioica*. Both the type and the variety are nearly dicœcious, many plants male, with imperfect, less-divided style-branches, which rarely bear fruit, and the few which occasionally appear very slender and few-seeded; many female, with entirely abortive anthers and very small flowers, which usually produce a dense row of thick oval or clavate, coral berries; others hermaphrodite or imperfectly dicœcious in all degrees.

It is probable that many species of Mamillaria have the same peculiarity. I have observed plants of other species growing in our garden which were completely unisexual.

MAMILLARIA (LACTESCENTES) BRANDEGEI. Engelm. in Coult. *Cactus Brandegei* Coult. l. c. 96.

MAMILLARIA (LACTESCENTES) GABBII. Engelm. in Coult. *Cactus Gabbii* Coult. l. c. 109.

These two plants are closely related and may belong to a single species. Mr. C. R. Orcutt has collected not far from San Quentin a form which is intermediate. The species of this section are unusually variable in their spines and the peninsular forms may be variations of species found in Mexico proper.

MAMILLARIA (COCHEMIEA) HALEI. Brandg. Proc. Cal. Acad. ser 2, ii 161. Stems clustered 3–5 dm. high; tubercles rather crowded, short conical from a broad base, woolly but not setose in the axils; spines 15–25, sub 3-seriate, all straight, centrals 6–9, the lower one 3–4 cm. long, porrect or deflexed, twice as long as, and much stouter than the others, radial spines shorter than the centrals, variable in number and arrangement; flowers 4–5 cm. long.

Collected so far only on Magdalena and Santa Margarita Islands.

MAMILLARIA (COCHEMIEA) PONDII Greene, Pitt., i, 268. Stems 1–4 dm. high, branching at and along the whole length of the older reclining ones, tubercles short, conical, not crowded, with woolly and conspicuously setose axils; spines 25–35 in about 3 series, whitish, light

* Confined so far as known to this island, unless Palmer's No. 901 from Guadalupe Island, Contr. Nat. Mus. i, 24, may belong to this variety.

to very dark brown, the outer radiant, short, white, variable in number, the next 5–8, brown, longer, the central row 3, two of them rarely 1 or 3, strongly hooked, 2–4 cm. long, much exceeding the others; fruit oval or obovate, 2–3 cm. long, scarlet, seeds black and pitted.

Description amended from numerous specimens brought from Cedros Island by A. W. Anthony, and now flowering in our garden. It has been collected also by Mr. Brandegee, on Natividad Island, where it is even more abundant than on Cedros.

MAMILLARIA (COCHMEIEA) ROSEANA, Brandg. Zoe, ii, 19. *M. Radliana* Quehl, Monats. f. Kakteen. ii, 104, 1892 with cut. The fruit of this differs much from that of the related species. It is broad, flattened at the top and shorter than the somewhat remote tubercles, so that a plant in fruit looks as if crowded with a row of flat scarlet buttons pressed in between. In some specimens a single stout seta is found in the axils. The spines, especially the central one, vary greatly in length. This is the most widely diffused of the Cochemiea, extending over the lower half of the peninsula. It is found also on Santa Margarita Island and on Carmen Island. The locality given for *M. Radliana* is simply "Mexico."

MAMILLARIA (COCHEMIEA) SETISPINA, Engelm. in Coult. *Cactus setispinus* Coult. l. c. 106. This species is as yet only known from herbarium specimens of Gabb and of Mr. Brandegee.

It is possible that some of the elongated species of Mexico proper will be found to belong to this section when the flowers are better known.

ECHINOCACTUS VIRIDESCENS Nutt. To this species belongs *E. limitus* Engelm. in Coult. l. c. 374, *E. peninsulæ* Engelm. in Coult. l. c. 361, as to "near San Diego," and also, according to Mr. Orcutt, *E. Orcuttii* Engelm. in Orcutt, West Am. Sci. ii, 46, 1886.

ECHINOCACTUS PENINSULÆ Web. Bull. Mus. Hist. Nat. 1895, p. 5 (reprint), *E. Wislizenii* Engelm. of Mr. Brandegee's list in part. *Echinocactus peninsulæ* Engelm. in Coult. l. c. iii, 361, as to the type Gabb. No. 11, but not "near San Diego."

It is doubtful if more than three species can be separated from the group represented by the ill-defined and incompletely known forms noted under *E. Californica, E. viridescens, E. Orcutti, E. cylindraceus, E. Emoryi, E. Wislizenii, E. peninsulæ* and their varieties.

E. Emoryi appears to be little understood. To it in most cases is referred any specimen belonging to this section, which lacks radial spines.

CEREUS GUMMOSUS Engelm. in Brandg., Proc. Cal. Acad., ser. 2, ii, 162 and Zoe ii, 20. *Cereus Cumengei* Web. Bull. Mus. Hist. Nat. 1895, p. 2 (reprint). *C. flexuosus* Engelm. MSS. in Coult. l. c. iii, 411. The flower of this species is thus described by Dr. Weber: "Flower nocturnal, large 25 cm. long by 10 cm. broad, lively rose-color without, white within." Mr. Brandegee described it as "four to five inches in length, purple." In examining it this year at San José del Cabo, he found that his memory had been at fault—that it was purplish outside, creamy white somewhat tinged with rose inside.*

CEREUS STRIATUS, Brandg. Zoe ii, 19, and Proc. Cal. Acad. ser. *ii*, 163. "Cereus sp. small, vine-like, with neither flowers nor fruit.—Santa Margarita and Magdalena Islands."† *Cereus Digueti* Web. Bull. Mus. Hist. Nat. 1895 p. 4 (reprint). At the time of original publication Mr. Brandegee did not know that this species had tuberous roots. He observed them the following year, and plants have been growing in our garden since 1894 but have not yet flowered. Professor Coulter says the flowers are purple, but does not give the source of his information. Mr. Brandegee had seen only dried remains of the flowers. Dr. Weber says, "According to M. Diguet, the flowers are nocturnal, white, about 15 cm. long." He compares the tubers to a bunch of dahlia roots. Mr. Orcutt‡ considers this species identical with, or only a form of, *C. tuberosus* Poselger; in this he is, however, certainly in error.

CEREUS BRANDEGEI Coult. l. c. 389, was recently brought in living specimens from San Juanico, by A. W. Anthony. To this as far as can be made out from the fragment belongs *C. Sanborgianus* Coult. l. c. 391. Captain Porter has brought from La Paz

*Since the foregoing was in type *C. gummosus* has flowered in our garden on a cutting brought from Cedros in July. It is nocturnal, 13 cm. long, creamy-white, the cylindrical tube and sepals brownish-purple.

†Dr. Edward Palmer, just returned from Topolobampo, brings me from that place a specimen of *Cereus striatus*. He reports it also as growing at the old "Rancho de Guaymas" a few miles from the city.

‡Review of the Cactaceæ of the United States, by C. R. Orcutt, San Diego, July 3, 1897.

a plant which apparently belongs here, although the lower central is much flattened and longer proportionately than in the type. It has not yet flowered.

CEREUS MAMILLATUS Engelm. in Coult. l. c. 405. The type of this is only a few cm. long and consists apparently of a rib sliced off so near the surface that the tubercles are almost disconnected, and pressed quite flat from the side. Some error is to be suspected in the description as to "ribs 20–25," for it otherwise agrees well with a cæspitose plant brought by Captain Porter from the vicinity of La Paz. It has not yet flowered. The "mamillæ" in the growing plant are not nearly so disconnected as is described. When the plant ceases growing or dies the intervals between the areolæ become much depressed. Notes of distance between areolæ and projection of tubercles are of very little value, depending as they largely do on the state of growth, and the texture of the tissue of the particular species.

CEREUS MARITIMUS Jones, Am. Nat. xviii, 973, 1883. In the original diagnosis the flowers are described truly as "light yellow." In Professor Coulter's paper the species was redescribed, evidently in ignorance of the original publication, as having "red" flowers. *Cereus flaviflorus* Engelm. in Coult. l. c. 391 is without doubt the same.

CEREUS ENGELMANNI Parry, Am. Jour. Sci., ser. 2, xiv, 338. From the center of the peninsula northward in the more elevated parts. It is reported from Cedros Island by Professor Greene, and a short spined specimen growing in our garden is said to have come from that place. These reports still require verification, the plant not having been seen on the island by Mr. Anthony or by Mr. Brandegee.

CEREUS POLYACANTHUS Engelm. of Coulter's report is a doubtful species. Mr. Orcutt's plant I have not seen. Mr. Brandegee's plant from La Paz, so referred by Coulter, appears to be *C. mamillatus*.

CEREUS PACIFICUS Coult. l. c. 397; *C. phœniceus pacificus* Engelm. in Orcutt West. Am. Sci. ii. 46 (1886). The type came from north of Ensenada not 100 miles below the boundary. Mr. Brandegee found it on the slopes of San Pedro Martir at about 7,000 feet elevation. Of the plants from Comondu Cliffs, and

Sierra de la Laguna, the flowers are not known, and as they have long stems—sometimes several feet—hanging from cliffs, the reference may be an error.

CEREUS EMORYI Engelm. Am. Jour. Sci. ser. 2, xiv, 338, 1852, has been collected by Mr. Brandegee as far down as El Rosario, but it probably extends very much farther down along the western coast.

CEREUS ERUCA Brandg. Proc. Cal. Acad. ser. 2, ii, 163, pl. vii, 1889. Of this species the flowers are still uncertain. It has been growing in our garden for nearly three years but has not flowered. The color of the tissue of the plant is nearer orange than yellow. The plant from Todos Santos,* doubtfully identified with this species by Coulter, appears to be *C. Brandegei.*

CEREUS SCHOTTII, at least the Lower Californian form, with *C. Sargentianus* Orcutt, *C. cochal*† Orcutt and a plant from the vicinity of Guaymas—perhaps *C. alamosensis* Coult. l. c. 406—form, with perhaps several others, a remarkable section of Cereus distinguished by numerous axillary buds. Flowers are often produced side by side as Mr. Orcutt notes, and as shown in some of Mr. Brandegee's specimens of *C. cochal*, but usually they appear in succession. Mr. Brandegee notes that "about Todos Santos *C. Schottii* runs into some very peculiar forms, the tops of the stems differing in their spines in no respect from the lower part,"‡ and Orcutt says, "So-called 'sterile stems' produce flowers freely."§

CEREUS THURBERI Engelm. Am. Jour. Sci., ser. ii, xvii, 234. This species of the southern part of the peninsula is perhaps correctly identified, but I have not seen complete material from the Sonoran type locality.

CEREUS PRINGLEI Wats. Proc. Am. Acad., xx, 368 (1885).

CEREUS PECTEN-ABORIGINUM Engelm. in Wats. l. c. xxi, 429 (1886). To these two species of Sonora and Chihuahua, without

*There is apt to be some uncertainty as to the place meant by this name. The Todos Santos of Mr. Brandegee's notes is between Magdalena Bay and Cape St. Lucas. Ensenada de Todos Santos, the Todos Santos mentioned by Coulter under *C. pacificus*, which is not a hundred miles from San Diego, is called Ensenada.

†Mr. Orcutt, l. c. 9, considers this identical with *C. geometrizans.*

‡Zoe, ii, 20.

§Orcutt, l. c. 29.

doubt belong *Cereus calvus & C. titan*, Engelm. in Coult. l. c. 409; the specimens of Gabb are such scraps that it may never be known with certainty to which. They probably both belong to *C. Pringlei*, certainly both do as to fruit. The woolly groove connecting the areolæ is not constant in these plants. It is present or absent in various parts of the same rib. Of course the trunks of all the giant species are more or less "bald" in age.

OPUNTIA TUNA (L.) is about the old missions and cultivated everywhere on the peninsula.

OPUNTIA ENGELMANNI var. LITTORALIS Engelm. Bot. Cal. i, 248. Northern part of the peninsula, along or near the coast.

OPUNTIA PYCNANTHA Engelm. in Coult. l. c. 423. Type Agassiz' specimen in Herb. Mo. Bot. Garden, but the "good joint, flower and ripe fruit" are in the herbarium of Mr. Brandegee.

OPUNTIA PYCNANTHA MARGARITACEA Coult. l. c. 424. These two plants have been brought to San Diego in living specimens by Captain Porter.

OPUNTIA ANGUSTATA COMONDUENSIS Coult. iii, 425, described as having "joints semi-obovate (one side straight as if an obovate joint had been divided in the median line), states what actually occurred. Mr. Brandegee in making specimens of the larger Platopuntias splits the joint and then divides it longitudinally down the center. Of course the plant has nothing to do with *O. angustata*, the reference having been made on account of the supposed shape of the joint.

OPUNTIA TAPONA Engelm. in Coult. l. c. 423. This and the above are the common *Platopuntiæ* of the southern part of the peninsula; both are growing in our garden. The type of the last species is less than an inch square.

OPUNTIA INVICTA Brandg. is the stoutest of the *clavatæ*, the joints, well developed, attain a circumference of 3 dm. It has flowered and fruited abundantly this year in San Diego. There is no ground whatever for the suspicion that it might be a species of Cereus. Its flowers and fruit are exactly Opuntia.*

*OPUNTIA BRADTIANA (Coult.) *Cereus Bradtianus* Coult. l. c. 406, is perhaps the nearest relative of *O. invicta*. In both species the tubercles are more or less confluent into vertical ridges. In *O. Bradtiana* they are almost completely so. The spines are, however, barbed and the young joints are covered with conspicuous subulate leaves, so that there can be no doubt that it belongs to Optunia, although I have not seen fruit or flower.

OPUNTIA PROLIFERA Engelm. Am. Jour. Sci., ser. 2, xiv, 338 (1852). Southward some distance into the peninsula—how far is not yet known. The plant from Guadalupe is doubtfully identified.

OPUNTIA CHOLLA Web. l. c. 6 is the *O. prolifera* of Mr. Brandegee's lists as to the plant of the southern part of the peninsula. To this may belong the specimen from Magdalena Island referred by Prof. Coulter to *O. fulgida.*

OPUNTIA MOLESTA Brandg. Proc. Cal. Acad., ser. 2, ii, 164. To this may belong *O. Calmalliana* Coult. l. c. 453, and *O. clavellina* Engelm. in Coult. l. c. 444—closely related species.

OPUNTIA CIRIBE Engelm. in Coult. l. c. 445, "from Comondu and Loreto northward beyond Rosario." Gabb's fragment appears to be lost, but in our herbarium is a sheet containing two specimens, one from Purisima and one from Comondu, which answer to the description. The sheet has the name *Opuntia Bigelovii* Engelm. written upon it between the labels and attested by the initials J. M. C. It is also growing in our garden, collected by Captain Porter somewhere in the peninsula.

OPUNTIA SERPENTINA Engelm. l. c. Northern part of the peninsula. *O. serpentina* of Mr. Brandegee's list, from Magdalena Bay, is certainly not that species. *Cereus* (?) Californicus Nutt. in T. & G. Fl. N. Am. i, 555, 1840, is the oldest name of this species, though Nuttall appears to have described the plant of *O. prolifera* and the flower of *O. serpentina.*

OPUNTIA ALCAHES Web. l. c. 6 (1895). This species and *O. cholla* are the common cylindric Opuntias of the Cape Region. *O. alcahes* is very near, if not identical with *O. echinocarpa nuda* Coult. l. c. 446.

OPUNTIA FULGIDA Engelm. Syn. Cact. 306, as to Mr. Brandegee's specimen from Calamajuet, has yellow flowers with only a slight reddish tinge on the outside as is common in many of the yellow-flowered species.

OPUNTIA RAMOSISSIMA Engelm. Am. Jour. Sci., ser. 2, xiv, 339 (1852). *O. tessellata* Engelm. Syn. Cact. 309 (1856). This has not been found on the peninsula so far as I know, but it occurs on San Benito Island.

OPUNTIA TESAJO* Engelm. in Coult. l. c. 448. "With very short, woody stem, and growing in little clumps 3 dm. or less in diameter; joints slender and not distinctly tuberculate; flowers simple, bell-shaped, yellow—Type, Gabb 26 in Herb. Mo. Bot. Gard. 'Among rocks, especially toward the west coast and in the more central portions.'" The type, such as it was, is missing.

A description like this must, in the absence of the fragment representing the type, be forever uncertain. The plant with which it is now doubtfully identified is *O. leptocaulis stipata*, as to Mr. Brandegee's specimens from San Gregorio, San Enrique and Agua Dulce, so referred by Professor Coulter. It is no form of *O. leptocaulis*.

OPUNTIA ROTUNDIFOLIA Brandg., Zoe, ii, 21. The seeds of this plant look, in the dried specimen, much like the pulvini on the fruit, which probably is the reason Professor Coulter could not find them. Abundant living specimens recently received from San José del Cabo show that the stems are not always spineless, nor the leaves always round. It may be identical with *Pereskia rotundifolia* DC., which appears from the picture to be not true Pereskia, but a Pereskioid Opuntia. A very similar, if not identical, plant has been collected at Topolobampo by Captain Porter, and later by Dr. Palmer, who says that it is called "the yellow rose of Sinaloa."

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*The tasajo is a plant resembling the pitahaya in the inner arrangement of its branches, which also are bare of leaves and thorny, although they are not so large and thick, nor of one piece, like those of the pitahaya, but each one is composed of various pieces, of about two inches in length, and united by certain stems, which separate during a high wind, or anything rudely touching them. These pieces detached from the bush, keep green for many months, although there may not be any moisture in the ground; and, if rain should fall before they are gathered, they take root and form new plants.

The fruit of the tasajo is similar to the tuna (prickly pear), but never ripens, consequently is of no use, but on the contrary is a nuisance, as it blocks the roads. Only in some places, where firewood is scarce, its branches answer for burning, as it kindles readily, but consumes quickly. The pieces of the tasajo are smaller and not so long as the little finger.—From Hist. of California by Father Clavijerro in Ross Browne's Sketch of Lower California.

SHORT ARTICLES.

CARPENTERIA CALIFORNICA.—The first collector of this plant, as is well known, was General Fremont, who obtained it on one of his expeditions through the interior of California. No definite locality was known for Carpenteria until Dr. Gustav Eisen rediscovered it in Fresno county on Big Dry Creek, in the foothills northeast of Fresno city. The shrubs, of which there were probably about one thousand, grew on the southern exposure of a chaparral hill about a mile above the Toll House near what is known as the Grape Vine Spring on the road to Pine Ridge. The altitude is about 3,500 feet, where are found the last Digger Pines (*Pinus Sabiniana*) and the first Sugar Pines (*Pinus Lambertiana*); it is also the lower limit of Fremontia, which extends 500 feet higher up. The shrubs were about seven to eight feet in height, and the flowers very striking in their showiness. The particular hill on which the species was found was about a mile in circumference. Big Dry Creek does not empty into Kings River, but loses itself in the San Joaquin plains.

Dr. Eisen collected about twenty-five pounds of the fruit, which was sent to a Washington florist, who distributed seed to other florists of the eastern United States and Europe. From such a source came the plants that were offered for sale in their catalogues. From seed of the same collection a single plant was also grown in the experimental garden of the Department of Agriculture of the University of California. This bush has never fruited, but it has been easily propagated by cuttings.

The above account of the single known locality was drawn up from a verbal description by Dr. Eisen. The rediscovery of the species was made in 1875 and the locality was revisited during several years thereafter.—W. L. J.

THE CARNATION RUST IN CALIFORNIA.—Although the disease known as the carnation rust, which is caused by the fungus *Uromyces caryophyllinus* (Schrank) Schroet., has been known in the eastern United States since about 1891, it does not appear to have been reported thus far west of the Rocky Mountains. I first noticed its presence at Berkeley, in the fall of 1896, and observations made since then seem to show that it is quite widely disseminated through-

out the Bay region. It often becomes a serious pest, especially during the wet winter months, and florists find their only safeguard is to avoid excessive moisture and renew their stock frequently with young, uninfected plants.—W. C. BLASDALE.

OPEN LETTERS.

I SEND you by to-day's mail, under separate cover, a species of thistle [*Centaurea solstitialis* Linn.], that is a very obnoxious weed, hurtful to growing crops, and that often kills horses which eat it when matured and dry. It will grow on good land, uninterrupted, to the height of three to four feet, and so thick that you can not force a team and mowing-machine through it. To mow it does not kill it, it seems only to improve its productiveness for seed; neither will flooding the ground kill the seed. . . . I have known flood-water to remain on the ground for four months, two feet deep, and the thistle to grow after the water receded. . . . It is locally called "Buckthorn" and "Russian Thistle."

W. R. MUMMA.

Grand Island, Colusa Co., Cal., September 3, 1897.

MISCELLANEOUS NOTES AND NEWS.

COUNT VICTOR TREVISAN, an Italian cryptogamist, died April 18, 1897, at Milan. His writings were largely algological.

IN advance of the eighth annual report of the Missouri Botanical Garden we have as a separate "The Mosses of the Azores and of Madeira," by C. Cardot.

THE Berlin Academy of Sciences has recently awarded nearly $20,000 to scientific investigators. Prof. Adolf Engler, of Berlin, received 2,000 marks for the publication of monographs on African botany, and Dr. G. Lindau, 900 marks for studies on lichen.

PLANS are now being prepared for an enlargement of the Missouri Botanical Garden. There is to be added a tract of some eighty acres, which will be mainly used for synopses of the flora of North America and the flora of the world, one plan following the arrangement of Bentham and Hooker, the other that of Engler and Prantl.

THREE new species of West American Coniferæ are distinguished by Mr. J. G. Lemmon in *Garden* and *Forest*, May 12, 1897 (x. 183–4). They are as follows: Pinus scopulorum (*P. ponderosa*, var. *scopulorum* Engelm.), Rocky Mountains. *Picea Columbiana* (*P. Englemanni* in part), Oregon to British Columbia, eastward to Montana. Abies Shastensis (A. *magnifica*, var. *Shastensis* Lemmon), Mt. Shasta and Scott Mountains to the Cascade Mountains in southern Oregon.

THE SUCCESSOR of the late Sir Ferdinand Baron von Mueller as Government Botanist of Victoria, is Mr. J. G. Luehman, who was for twenty-eight years his assistant. Mr. Luehman has been definitely placed in charge of the National Herbarium of Melbourne, with the title of Curator. This herbarium is under the ministerial control of the Chief Secretary of Victoria, and it is a fortunate fact that the present Under Secretary of the department is also a botanist, and takes a keen interest in the welfare of the herbarium.

IN the proceedings of the Biological Society of Washington (XI, 61–65, April 21, 1897) Mr. F. V. Coville sets aside Camassia as a generic name for the Camas Plant and renames the species under Quamasia, Raf., as follows: *Camassia Leichtlinii* Wats., becomes *Quamaia Leichtlinii; Camassia Cusickii* Wats., becomes *Quamasia Cusickii; Camassia esculenta* Lindl. (originally described by Pursh as *Phalangium quamash*) becomes *Quamasia quamash; Camassia Howellii* Wats., becomes *Quamasia Howellii; Camassia Fraseri*, Torr (originally described as *Scilla esculenta* Ker) becomes *Quamasia esculenta. Camassia Quamash* Greene is cited as a synonym of *Quamasia quamash* (Pursh). It is not the plant of Pursh, although Greene applied Pursh's specific name to it. It is *Camassia Leichtlinii* (or *Qumasia Leichtlinii*) and should be placed as a synonym of that species.

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THE PUBLICATION OF NEW BINOMIALS IN WORKS OF COMPOSITE AUTHORSHIP.

By B. L. Robinson.

As the use of *n. sp.* and *n. comb.* in the Synoptical Flora has been mentioned several times with adverse criticism, it may be as well to state why such abbreviations were employed. While Dr. Gray was carrying on the Flora alone, there was naturally no reason why the name of a new species should be followed by any particular sign to indicate its novelty. The mere omission of the authority, which was regularly given with the old species, was a sufficient indication of a new one. When, however, the work passed into other hands, and the text was prepared by several authors, it became desirable, indeed well nigh necessary, that the authority for each new species or new combination should be expressly indicated. If this necessity is not at once apparent, it becomes so when we observe the innumerable errors which have resulted from the omission of such authorities in works of composite authorship. For months after the advent of the Russian thistle in America, it was commonly referred to as *Salsola Kali*, var. *Tragus*, DC., although the *Chenopodiaceæ* of the Prodomus were described by Moquin, whose name as author appears clearly enough at the head of each page, but not after his new variety. Even in the 6th edition of Gray's Manual *Lychnis Githago* is ascribed to Lamarck, although the part of Lamarck's Encyclopedia where this combination appears, is signed by Desrousseaux. Without needless multiplication of examples, it is clear that the omission of the authority in the case of novelties, published in works of composite authorship, is a pernicious practice leading to subsequent error and misunderstanding.

But, on the other hand, if authorities alone are given, no difference is shown between the new names and the old ones. That such a distinction is desirable, needs no argument for those who have had any experience in examining new publications for purposes of indexing, reviewing, or synonymic cross-reference.

In the first fascicle of the Synoptical Flora, all new binomials were, for these reasons, indicated by *n. sp.* In the case of actual novelties, such as *Clematis Suksdorfii*, this practice does not appear to be open to any serious criticism, and even with new binomials, such as *Erysimum occidentale*, which result from a generic transfer, such a use of *n. sp.* is not really untruthful, since it is used in the by no means unprecedented sense of *nova species generis*, or new species of the genus concerned.

However, such a use certainly seems undesirable, since it obscures the more or less useful distinction between actual novelties and new combinations resulting from generic changes. To bring out this distinction also, the abbreviations *n. sp.* and *n. comb.* were respectively applied in the second fascicle of the Flora. The editor shares the critics' dislike of these expressions, yet feels strongly that in this case something of the sort is necessary to secure perfect clearness, which after all is the chief aim in scientific composition.

A NEW CALIFORNIAN IRIS.

By Carl Purdy.

Iris Watsoniana. Rhizome widely spreading, very stout, 6 to 9 lines in diameter; sheaths not splitting into coarse fibers; leaves 4 to 5 in a tuft, linear, clearly ribbed (but not so strongly as in *I. Douglasiana*), ascending, the upper third curving down as in *I. Douglasiana*, 6 to 9 lines wide, 20 to 30 inches long, longer than the scapes, rosy at base, long acuminate; stem stout, solid, compressed, 20 to 30 inches high, bearing 2 to 3 leaves which are 8 to 9 inches long, 4 to 5 lines wide; stem 2 to 3 headed, each branch 2 to 3 flowered; flowers not enclosed in spathes, the lower narrow bract 1 inch below lower flower; bract-spathes 2 to 3 inches long, green, lanceolate; pedicils 9 lines to 2 inches long; perianth tube 6 lines long, deep purple veined with white and yellow, varying to light lilac and sometimes pure white; the usual shade is as dark a purple as is found in the dark *I. macrosiphon*; falls

obovate, very broadly clawed, $1\frac{3}{4}$ inches long by 6 inches wide, lips recurved; standards as long, oblanceolate, unguiculate, 3 inches broad; style branches $1\frac{1}{2}$ inches long; crests large, denticulately toothed; capsule ovate oblong, long acuminate to apex, abruptly to base.

Described from fresh flowers collected at Eureka, Humboldt Co.; common in that region and forming great masses. Its habitat, growth, and thick rhizome are suggestive of *I. longipetala.* The flower is more that of *I. Douglasiana.* It has the gracefully drooping leaves of that species, but the branched leafy scape, the distant bract, and the capsule are very distinctive, and the range of color quite different. I take pleasure in naming this beautiful Iris after the late Dr. Sereno Watson in remembrance of many kindnesses.

SHORT ARTICLES.

CORRECTION IN NOMENCLATURE.—The grass known as *Milium multiflorum* Cav. is the *Piptatherum multiflorum* of Beauvois and has been referred to *Urachne parviflora* Trin. which is *Agrostis miliacea* Linn.

Bentham & Hooker united *Piptatherum* Beauv. and *Urachne* Trin. with Oryzopsis, and have been followed by Hackel; this plant should, therefore, be called **Oryzopsis miliacea** (L.). J. BURTT DAVY.

CENTAUREA SOLSTITIALIS IN COLUSA CO.—Mr. W. R. Mumma writes that the St. Barnabas' Thistle was first seen near Grand Island eighteen years ago (1879), but that he cannot learn from whence or how it came there.

NEWS NOTES AND CURRENT COMMENT.

DR. P. MAGNUS of Berlin visited San Francisco in September and was a guest of the botanists of the vicinage.

MR. J. B. DAVY of the University of California is now in England for a limited period. He expects to spend a few weeks at Kew in looking up early Californian types.

MR. S. B. PARISH, of San Bernardino, California, has re-

cently distributed a fourth century of "select plants of Southern California." The specimens are choice and will be found equal to those of previous sets.

THE COMPLETION of the Flora of British India, on which Sir Joseph Hooker has been engaged for twenty-five years, is announced. Although advanced in years Sir Joseph will undertake to complete Trimen's unfinished Flora of Ceylon.

DR. R. A. PHILLIPPI, for many years the most well-known of South American botanists, has recently resigned the Directorship of the National Museum at Santiago, Chili, which he has held for forty-three years. He is now ninety years of age.

DR. AUGUSTINE HENRY, the well-known explorer of China, writes to the *Kew Bulletin* that the region about Yunnan, "the most interesting in the world," is evidently the headquarters of most of the genera which are now spread all over Europe and Asia in great part. He finds the wild tea in that country; hitherto tea has been found wild only in Assam.

THE Department of Botany of this University has recently moved from its old and much crowded quarters in South Hall to a building recently erected for its exclusive use, a further notice of which will be given in a future number of this journal.

THE Board of Directors of the Southern California Academy of Sciences at Los Angeles for 1897–8 is as follows: W. A. Spaulding, President; Abbott Kinney, First Vice-President; Dr. A. Davidson, Second Vice-President; Dr. E. A Praeger, Treasurer; B. R. Baumgardt, Secretary; Dr. Jos. C. Nevin; Dr. H. M. Bishop; J. D. Hooker; Prof. J. A. Foshay; W. H. Knight; J. S. Vasburg. The "Bacteriologist and Botanist" of the Agricultural Experiment Section is A. J. McClatchie.

THE DIVISION OF BOTANY of the U. S. Department of Agriculture has issued a timely eight page Circular ("No. 12.—Revised."), on the Camphor Tree. The circular has

been compiled by Mr. Lyster H. Dewey, and comprises a concise and full account of the tree, its native range, range under cultivation, uses and products, conditions of successful cultivation, propagation, planting and cultivation, the distillation of camphor gum, refining, and the outlook for a future market.

W. A. STILES, editor of *Garden and Forest*, died October 6th. Shortly after leaving Yale College he came to California from New Jersey and was a member of the engineer corps which located the line of the Central Pacific Railroad. He was a man of many and varied interests and accomplishments, being a remarkable mathematician, a politician in the best sense and a lover of music as well as of nature.

OF WRITINGS of Eastern botanists relating to Western America, tardily claiming our attention, we have to note in brief two issues of Prof. Greene's *Pittonia*. Part 16 contains, among other things, a paper on "Ranunculaceous Monotypes" and another on "New Western Plants." Part 17 contains descriptions of 5 new species of Eriogonum and 15 new species of clover, a goodly number of the latter being from Middle California. There are various other articles nomenclatorial and systematic.

THE seventh fascicle of the Phycotheca Boreali-Americana just issued by Messrs. Collins, Holden and Setchell contains the following Californian species: 317, *Sphæroplea annulina;* 323, *Scytisiphon lomentarius*; 327, *Taonia Lennebackeræ*; 329, *Lemanea annulata;* 330, *Nemalion Andersonii*; 332, *Gelidium crinale* var. *spathulatum;* 332, *Agardhiella Coulteri;* 335, *Nitophyllum latissimum;* 336, *N. multilobum;* 337, *N. uncinatum;* 338, *Ricardia Montagnei;* 339, *Polysiphonia Baileyi;* 343, *Platythamnion heteromorphum.*

INASMUCH as the cultivation of cacti removed from their native habitat is attendeded with difficulties of a nature serious to the ecologist, no site for a cactus garden could be better than one in the midst of the cactus-region where the species may be grown side by side under perfectly normal conditions.

Such a garden has been begun at the University of Arizona, which is to be commended for its energy in this direction. Incidentally the cactus herbarium of Professor Toumey is worthy of mention, not so much on account of its completeness as for the unique character of the specimens, it having been shown that with skill and care the entire plant or a satisfactory representation of it might be preserved in a dried state.

A VERY full and instructive account of the plants used by the Klamath Indians of Oregon is given by Mr. F. V. Coville in Vol. V, No. 2 (June 2, 1897), of the Contributions from the United States National Herbarium. A very considerable number of plants are utilized for food, the fruits of the more insignificant annuals not being neglected. The achenes of of *Polygonumm Douglasii*, for example, are gathered and the calyces rubbed off by hand; the product is then parched and ground into a meal which is eaten dry or boiled; if boiled the material turns red. The seeds of *Chenopodium Fremonti* and *Nymphaea polysepala* are also employed as food, the pods of the latter being gathered in enormous quantities. The roots of *Purshia tridentata* steeped in water serve as a remedy for lung and bronchial affections, and the fibre of *Urtica Breweri* is used in the manufacture of cords and nets. An alphabetical list of Indian plant names concludes the paper.

SUBSCRIPTIONS for Vol. VI, 1898, are now due and the price, $1.50, should be remitted to Erythea, Berkeley, California. The January number will be issued on the 3rd of the month. The February number will be issued about February 10th. The May number will contain a sketch of the life of the late Dr. Bolander, accompanied by a portrait.

ERRATA.

Page 19, lines 28 and 29, read italicized words in small caps.
" 43, line 28, for macrocarpe read macrocarpa.
" 45, " 27, for are read is.
" 46, " 5, between and Melobesia insert 299.
" 46, " 6, for Haro read Harv.
" 52, " 22, for alismæafolius read alismæfolius.
" 56, " 13, read Stachys pycnantha.
" 56, " 26, for Northern Butte read northern Butte County.
" 58, " 4, for Hebenaria read Habenaria.
" 58, " 30, for Nutalli read Nuttallii.
" 78, " 18, for of the like nature read of a like nature.
" 87, " 1, for Notes on California Bryophytes read Notes on Californian Bryophytes.
" 96, " 33, for 7 dm. read 7 dmm.
" 103, date line at foot of page for No. 9 read No. 10; also like error on cover.
" 113, line 8, for oppressed read appressed.
" 126, " 21, for Quamaia read Quamasia.

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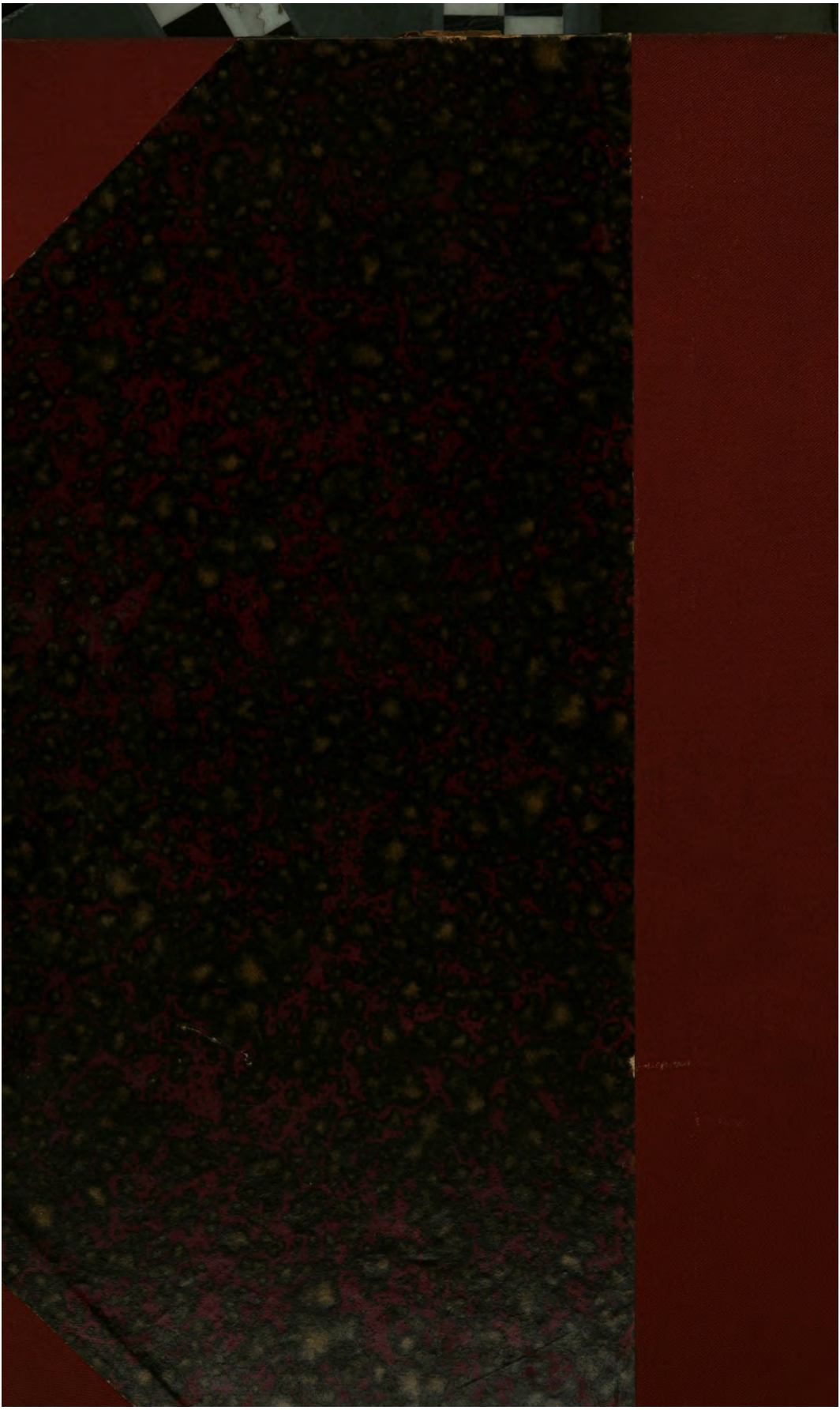
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